ROBO-6710/6730 Series

Single Board Computer

User's Manual

Table of Contents

How to Use This Manual

How to Use This Manual

The manual describes how to configure your ROBO-6710/6730 series system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this series model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and CompactFlash to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5 : Troubleshooting. Provides various useful tips to quickly get ROBO-6710/6730 series running with success. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

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EC Declaration of Conformity
(To Be Added)

For the following equipment:

Product Name:

Model Name:

Trade Name:

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC). The equipment was evaluated and passed the test, the following standards were applied :

EMC :	EN 55022	(1994/A1:1995 Class A)
	EN 50082-2	(1991)
	EN 61000-4-2	(1995)
	EN 61000-4-3	(1996)
	EN 61000-4-4	(1995)
	EN 61000-3-2	(1995)
	EN 61000-3-3	(1995)

The following manufacturer is responsible for this declaration :

Portwell, Inc.
(Company Name)

3F, No.88, Sec.1, Nei-Hu Rd., Taipei, Taiwan
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Chapter 1
System Overview

1.1 Introduction

Since hot selling of Centrino™ Notebook, Intel® new generation mobile processor, Pentium® M & Celeron® M are noticed by end user, especially those applications that are limited to space and power consumption. However, the price of Pentium® M & Celeron® M processors is still too high to implement. As time goes by, the price drops because new production process is mature. At the very moment, Portwell release one PCI half-sized cards that with mPGA479M socket (ROBO-6710) and fanless ULV Celeron® M 600MHz processor (ROBO-6730) on-board. TDP (Thermal Design Power) of ULV Celeron® M 600MHz processor is 7W. The Ultra Low Voltage BGA type processor only needs passive heat sink on it for heat dissipation that makes noise disappears and extends MTTR of the system.

The ROBO-6710/6730 designed with Intel® 852GM and ICH4 chipset, beside the special processor it supports, the GMCH (Graphics Memory Controller Hub) supports different types of display that includes standard VGA, LVDS and one DVO port. The DVO port could support the TV-out by project. As the result of LVDS is the interface of latest LCD panel, ROBO-6710/6730 is the best solution that does not need any adapter board in between. In addition, 852GM also supports dual view function.

The ROBO-6710/6730 can be adopted by equipments such as GPS system in vehicle, multimedia advertisement machine, POS (Point of Sales), POI (Point of Information), portable measurement machine, supervision machine on ship and so on.

ROBO-6710/6730 features:

- mPGA479M socket to support 400MHz FSB Mirco-FCPGA type Pentium® M and Celeron® M type processor (ROBO-6710)

- On-board 400MHz FSB, Banias core Intel® Celeron® M 600MHz processor (ROBO-6730)

- Support DDR 200/266 SODIM module, up to 1GB system memory and integrated Intel® Extreme Graphics 2.0 with DVMT (Dynamic Video Memory Technology) that ensures the most efficient use of system memory

- Support dual display over VGA, LVDS interfaces

- Equipped one Fast Ethernet port on-board (Gigabit Ethernet support by project)

- Audio out, Watch-dog timer, Type II CompactFlash socket, 4 USB 2.0 ports

- One 40-pin IDE channel and one 44-pin IDE channel (dedicated for 2.5″ hard drive connection)

1.2 Check List

The ROBO-6710/6730 series package should cover the following basic items:

- ✓ One ROBO-6710/6730 single board computer
- ✓ One CPU cooler (ROBO-6710); one CPU heat sink (ROBO-6710)
- ✓ One Parallel port & one Serial port with bracket
- ✓ One FDC cable (2.0mm pitch)
- ✓ One 40-pin IDE cable and one 44-pin to 40-pin IDE cable
- ✓ One Y-cable cable for PS/2 keyboard and mouse
- ✓ One 4-pin ATX power control cable for backplane connection
- ✓ One Installation Resources CD-Title
- ✓ One booklet of ROBO-6710/6730 series manual

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

- **Main processor**
  - Intel® Pentium® M or Celeron® M processor (ROBO-6710)
  - Intel® ULV Celeron® M 600MHz processor (ROBO-6730)
  - FSB: 400MHz

- **BIOS**
  Phoenix (Award) system BIOS with 4MB Flash ROM with easy upgrade function ACPI, DMI, Green function and Plug and Play Compatible

- **Main Memory**
  - Support DDR memory interface
  - Non-ECC, non-buffered DIMMS only
  - One SODIMM socket support 266/200 DDR-SDRAM up to 1GB System Memory

- **L2 Cache Memory**
  - 1MB/2MB in Intel® Pentium® M, 512KB/1MB in Intel® Celeron® M Processor
  - 0KB in Intel® ULV Celeron® M 600MHz processor

- **Chipset**
  Intel® 852 GMCH and ICH4 chipset

- **Bus Interface**
  - Follow PCI 2.1 standard (32-bit PCI)
  - Fully complies with PCI Local Bus specification V2.1 (support 4 master PCI slots)

- **PCI IDE Interface**
  Support two enhanced IDE ports up to four HDD devices with PIO mode 4 and Ultra DMA/33/66/100 mode transfer and Bus Master feature

- **Floppy Drive Interface**
  Support one FDD port up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2"
  (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD

- **Serial Ports**
  Support two high-speed 16C550 compatible UARTs with 16-byte T/R FIFOs

- **IR Interface**
  Support one 6-pin header for serial Standard Infrared wireless communication

- **Parallel Port**
  Support one parallel port with SPP, EPP and ECP modes

- **USB Interface**
  Support four USB (Universal Serial Bus) ports for high-speed I/O peripheral
  devices

- **PS/2 Mouse and Keyboard Interface**
  Support one 6-pin Mini-DIN connector for PS/2 keyboard/mouse connection
  through Y-Cable separation and one 5-pin shrouded connector for PS/2
  keyboard connection through backplane connection

- **ATX Power Control Interface**
  One 4-pin header to support ATX power control with Modem Ring-On and
  Wake-On-LAN function

- **Auxiliary I/O Interfaces**
  System reset switch, external speaker, Keyboard lock and HDD active LED, etc

- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/Calendar with battery backup for 7-year data
  retention

- **Watchdog Timer**
  - Support WDT function through software programming for enable/disable and
    interval setting
  - Generate system reset

- **CompactFlash**
  - True IDE mode, compatibles with the ATA/ATAPI-4 specification
  - One Type II CF socket on secondary IDE channel for supporting up to 1GB
    memory
  - Bootable for no drives on primary channel

- **On-board VGA**
  - Intel® GMCH integrated graphics controller (852GM Integrated Intel® Extreme
    graphics 2)
  - Intel® DVMT shared display memory up to 64MB DDR Memory
  - Analog Display Support up to 2048 x 1536 @ 60Hz refresh
  - Multiplexed Digital Display Channels supports flat panels up to 2048x1536 @
    60Hz or CRT/HDTV at 1920 x 1080 x 18 & 24bpp @ 85Hz
  - Software DVD at 30 fps, full screen
  - Motion Video Acceleration

- Dual channel LVDS interface for LVDS Panel Display
- Panel Signal voltage must be 3.3V or 5V
- Inverter voltage: 12V

● **On-board Ethernet LAN**
Intel® 82562 Fast Ethernet controller to support RJ-45 connector

● **High Driving GPIO**
Support 8 programmable high driving GPIO

● **Cooling Fans**
Support one 3-pin headers for CPU cooling fan

● **System Monitoring Feature**
Monitor CPU temperature, system temperature and major power sources, etc

● **Bracket**
Support one CRT port, one Mini-DIN port for PS/2 keyboard/mouse , Ethernet port with 2 indicators, and one Serial port

● **Outline Dimension (L X W):**
185mm (7.3″) X 122mm (4.8″)

● **Power Requirements:**

ROBO-6710:
- +12V @1.42A
- +5V @1.92A

ROBO-6730
- +12V @1.1A
- +5V @1.92A

Test configuration:
 · CPU: Intel® Pentium® M – 1.6GHz/400MHz FSB/2MB L2 Cache
 · CPU: Intel® ULV Celeron® M – 600MHz/400MHz FSB/0KB L2 Cache
 · Memory: DDR SDRAM 512MBx1
 · Primary Master IDE HDD: WD-WD2000BB-00DAA0
 · OS: Microsoft Windows 2000 Professional + SP4
 · Test Programs: 3D Mark 2001 PRO for loading VGA and Burning Test V4.0 for loading CPU
 · Connected Fans: Only CPU fan connected (ROBO-6710)
 · Run Time: 30 minutes

● **Operating Temperature:**
0°C ~ 55°C (32°F ~ 131°F)

● **Storage Temperature:**
-20°C ~ 75°C (-4°F ~ 167°F)

● **Relative Humidity:**
5% ~ 95%, non-condensing

1.3.1 Mechanical Drawing
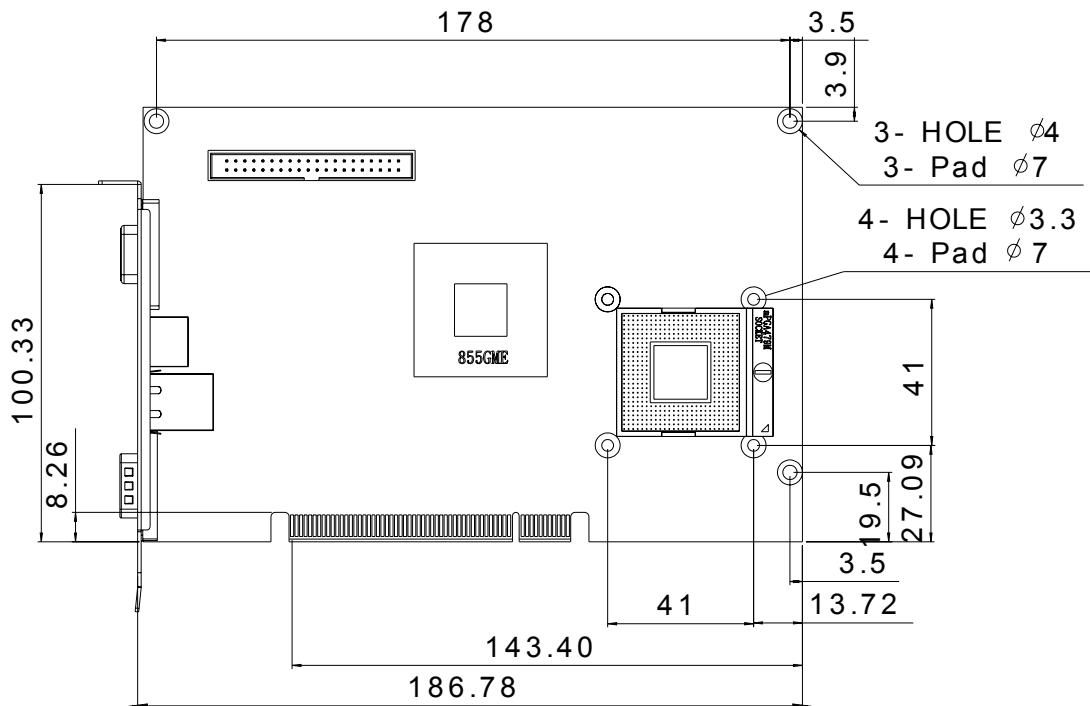
1.4 System Architecture

The following illustration of block diagram will show you how ROBO-6710/6730 gives you a highly integrated system solution.

The most up-to-date system architecture of ROBO-6710/6730 includes two main chips, 852GM GMCH (Graphics and Memory Controller Hub) and ICH4 (I/O Controller Hub), to support Pentium® M/Celeron® M & Ultra Low Voltage Celeron® M processor, DDR-SDRAM, 3D graphic display, PCI bus interface, APM, ACPI compliant power management, USB ports, SMBus communication, and Ultra DMA/33/66/100 IDE Master.

The on-board super I/O chip, W83627HF, will support PS/2 Keyboard/Mouse, two UARTs, FDC, Hardware Monitor, Parallel, Watch Dog Timer and Infrared interface. Besides, the on-board Intel® 82562 Fast Ethernet will give user more flexibility and reliability of application in a highly-integrated environment.

The 852GM, an integration of memory & graphics controller delivers AGP class graphics performance to PCs at reduced cost. It dynamically allocates and de-allocates system memory for complex 3D textures.

The ICH4 employs the Accelerated Controller Hub architecture, which makes a direct connection from the graphics and memory to IDE controllers. It supports 2-channel dedicated Ultra DMA-33/66/100 IDE master interfaces, full Plug-and-Play compatibility, APIC (Advanced Programmable Interrupt Controller) interface, and internal real-time clock (RTC) to maintain time and date of a system. It also supports four USB 2.0 ports (Universal Serial Bus feature) and PCI 2.1 Compliance operation. The 32-bit PCI bus interface supports 4 PCI masters for external backplane support. It fully supports Operating System Directed Power Management via the Advanced Configuration and Power Interface (ACPI) specification.

The Super I/O chip W83627HF integrates two high-speed serial ports, one parallel port, SIR interface, Watch Dog Timer (WDT) which is enabled by jumper setting and triggered by software, H/W monitoring, FDD interface and keyboard controller with PS/2 mouse ports. This parallel port supports one PC-compatible printer port (SPP, bi-direction), Enhanced Parallel Port (EPP) and Extended Capabilities Port (ECP).

The on-board Fast Ethernet function via RJ-45 port, and the on-board Audio Codec controller with MIC/Line-In/Line-Out connectors are to support full functionality of ROBO-6710/6730 AIO SBC (All-In-One Single Board Computer).

All of details of operating relations are shown in following ROBO-6710/6730 System Block Diagram.

IMVP-IV VR	**Pentium M /Celeron M Processor**	CLOCK

ADDR CTRL DATA

AGTL+BUS 400MHz BPSB

ADDR CTRL DATA

| VGA | RGB | **852GM GMCH** | | DDR_series Resistors | DDR SODIMM Sockets x 1 | DDR Termination Res. & Cap. |

| TV OUT | CH7011 | DVO | | LVDS | LVDS Connectors |

HUB 1.5

| 2x IDE Pin Header & 1xCF socket | UDMA/100 | **ICH4** | PCI | 82541/82562 | LAN |

| 4 USB Port | USB2.0/1.1 | | AC97 | AUDIO |

LPC

| FWH | | LPC I/O Controller W83627HF |

| GPIO | FDD | Paraller Port | Header COM1~COM2 | KB/MS |
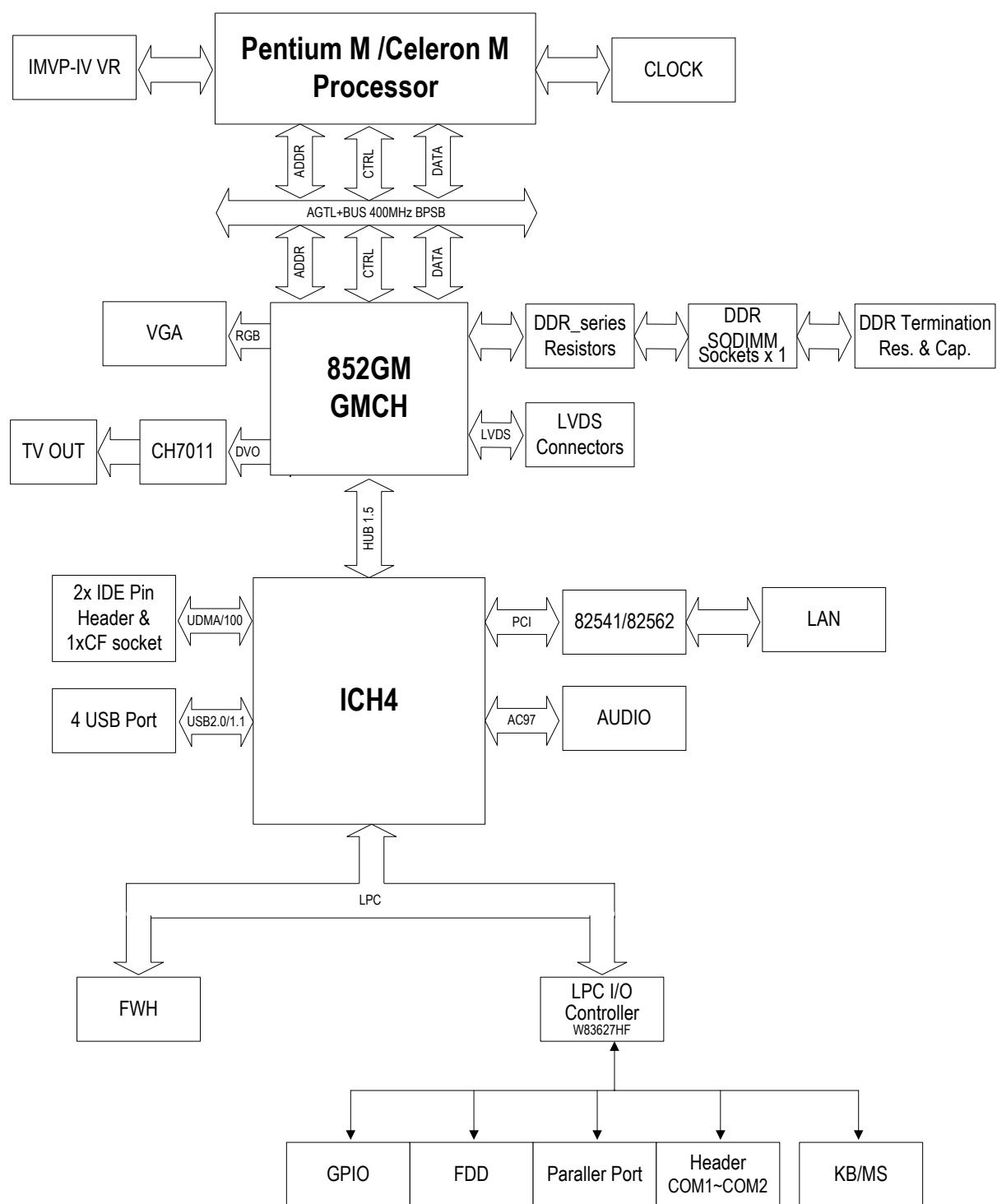
ROBO-6710/6730 System Block Diagram

Chapter 2
Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers and connector. All of the configuration jumpers on ROBO-6710/6730 are in proper position. The default jumper settings shipped from factory are marked with an astral (★).

2.1   Jumper Setting
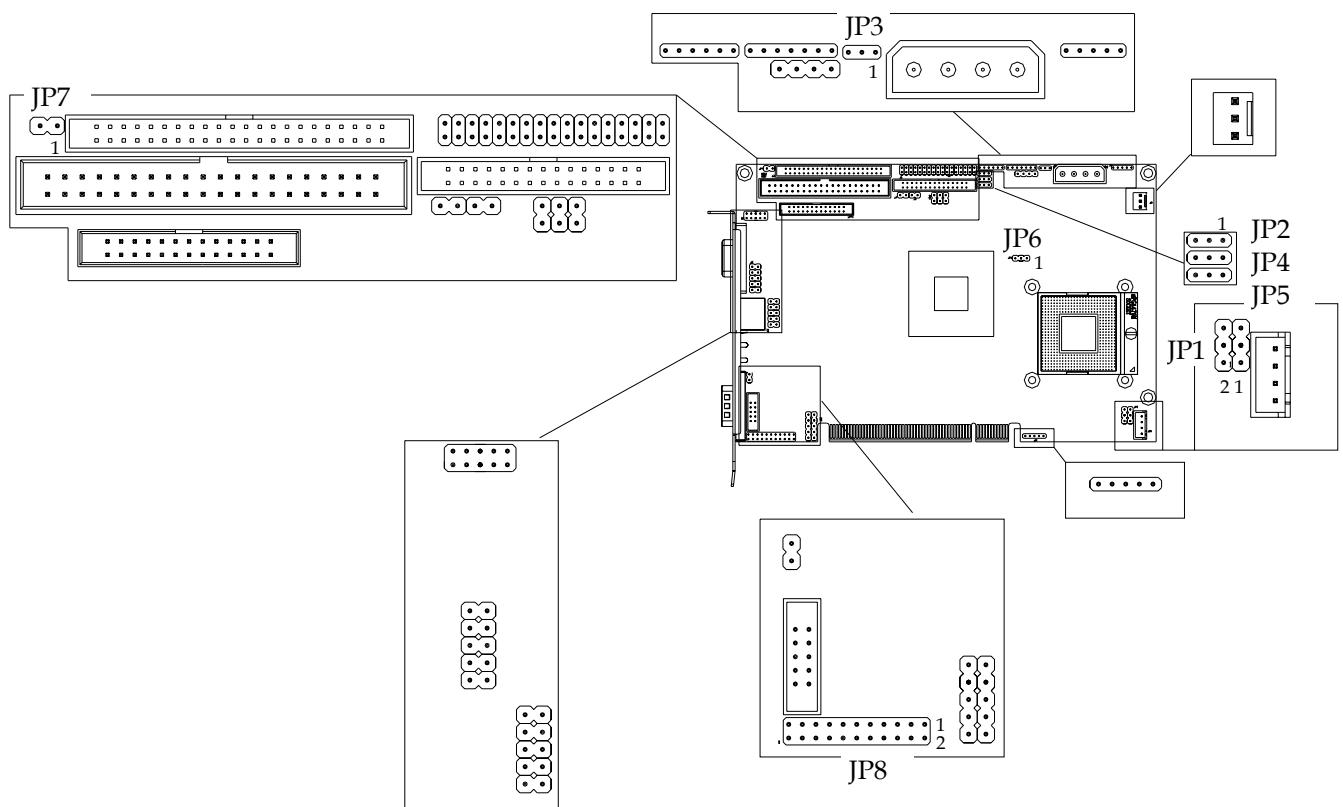
Figure 2-1   ROBO-6710/6730 Jumper Location

JP1 : AT&ATX Selector

JP1	Jump Setting
1-3,2-4	AT Function
3-5,4-6	ATX Function★

JP2 : LVDS Panel Backlight Active Type Selector

JP2	Backlight Power Active Type
1-2	Low Active
2-3	High Active★

JP3 : Power Source for CPU VCCP Selector

JP3	LVDS VCCP
1-2	1.2V for BANIAS★
2-3	1.35V for DOTHAN

JP4 : LVDS Panel Backlight Power Type Selector

JP4	Backlight Power Type
1-2	5V
2-3	12V★

JP5 : LVDS Panel Power Source Selector

JP5	LVDS Panel VDD
1-2	3.3V★
2-3	5V

JP6 : Power Source for CPU VCCA Selector

JP6	CPU VCCA
1-2	1.8V for BANIAS★
2-3	1.5V for DOTHAN

JP7 : RTC CMOS Clear Jumper Setting

JP7	Function
OFF	Normal Operation ★
1-2	Clear CMOS Contents

JP8 : COM2 RS-232/RS-422/485 Selector

Function	Jump Setting
RS-232	5-6,9-11,10-12,15-17,16-18★
RS-422	3-4,7-9,8-10,13-15,14-16,21-22
RS-485	1-2,7-9,8-10,19-20

2.2   Connectors

I/O peripheral devices and flash disk are connected to the interface connectors and CF socket on this board computer (Figure 2-2).
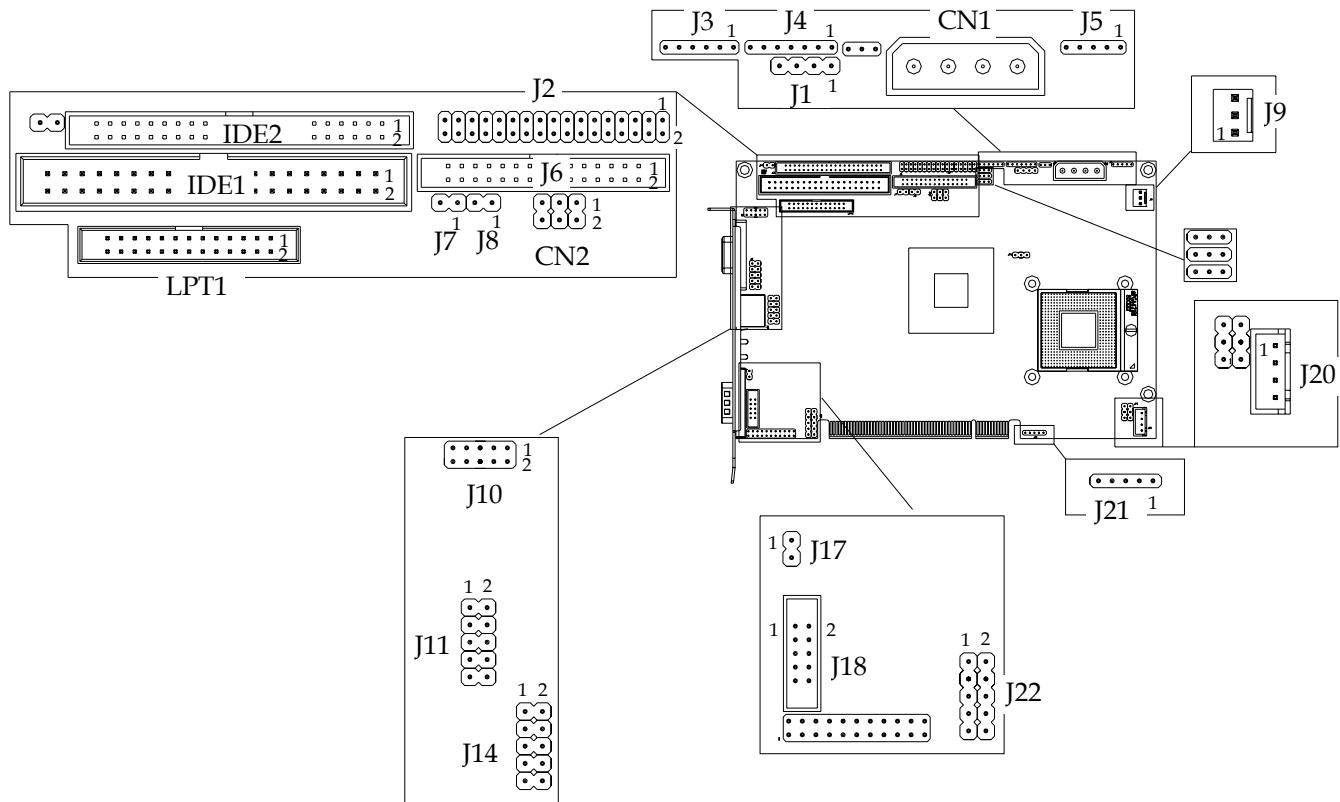
Figure 2-2   ROBO-6710/6730 Connector Location

Connector Function List

Connector	Description	Remark
CN1	ATX Power Connector	
CN2	TV Output Connector	
J1	BUZZER Connector	
J2	FDC Interface Connector	
J3	IR Connector	
J4	LVDS Inverter Connector	
J5	Panel Connector	
J6	LVDS Interface Connector	
J7	Power ON/OFF Header	
J8	HDD LED Header	

J9	System FAN Connector	
J10	GPIO Interface Connector	
J11	USB Port2/USB Port3 Interface Connector	
J14	USB Port4/USB Port5 Interface Connector	
J17	System Reset Header	
J18	COM Port2 Connector	
J20	5VSB Header For ATX	
J21	Front Panel SMBUS Header	
J22	MIC/Line IN/Line OUT Interface Connector	
J24	Compact Flash Connector	
	IDE1 Interface Connector	
	IDE2 Interface Connector	

CN1: Additional Power Connector

PIN No.	Signal Description
1	+12V
2	GND
3	GND
4	VCC

CN2: TV Output Connector

PIN No.	Signal Description
1	GND
2	CVBS
3	Y
4	C
5	NC

J1: BUZZER Connector

PIN No.	Signal
1	BUZZER+
2	NC
3	NC
4	BUZZER -

J2: FDC Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GND	2	Drive Density Select bit 0
3	GND	4	NC
5	GND	6	Drive Density Select bit 1
7	GND	8	INDEX
9	GND	10	Motor A On
11	GND	12	Drive Select B
13	GND	14	Drive Select A
15	GND	16	Motor B On
17	GND	18	DIR
19	GND	20	STEP
21	GND	22	Write data
23	GND	24	Write enable
25	GND	26	Track 0
27	GND	28	Write protected
29	NC	30	RDATA
31	GND	32	Head Select
33	NC	34	Diskette Change

J3: IR Connector

PIN No.	Signal Description
1	5V
2	NC
3	Receiving Input
4	GND
5	Transmitter Output
6	NC

J4: LVDS Inverter Connector

PIN No.	Signal Description
1	12V
2	GND
3	GND
4	5V
5	SMBCLK
6	LVDS Backlight
7	LVDS Enable

J5: Panel Connector

PIN No.	Signal Description
1	5V
2	
3	Power LED
4	Key lock-
5	GND

J6: LVDS Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
2	LVDS VDD	1	LVDS VDD
4	Channel A Data0-	3	Channel A Data0+
6	Channel A Data1-	5	Channel A Data1+
8	Channel A Data2-	7	Channel A Data2+
10	Channel A Data3-	9	Channel A Data3+
12	Channel A Clock-	11	Channel A Clock+
14	Panel DDC Clock	13	Panel DDC Data
16	GND	15	GND
18	Channel B Data0-	17	Channel B Data0+
20	Channel B Data1-	19	Channel B Data1+
22	Channel B Data2-	21	Channel B Data2+
24	Channel B Data3-	23	Channel B Data3+
26	Channel B Clock-	25	Channel B Clock+
28	Panel DDC Clock	27	Panel DDC Data
30	GND	29	GND

J7: Power ON/OFF Header

PIN No.	Status
1	ON: Power ON/OFF
2	OFF: Normal

J8: HDD LED Header

PIN No.	Status
1	LED Power +
2	LED Power -

J9: System FAN Connector

PIN No.	Function
1	GND
2	12V
3	Sense

J10: GPIO Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GPI 4	2	GPO 0
3	GPI 5	4	GPO 1
5	GPI 6	6	GPO 2
7	GPI 7	8	GPO 3
9	GND	10	5V

J11: USB Port2/USB Port3 Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GND	2	USB3 Power
3	USB2 GND	4	USB3 Data-
5	USBD2 Data+	6	USB3 Data+
7	USBD2 Data-	8	USB3 GND
9	USB2 Power	10	GND

J14: USB Port4/USB Port5 Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GND	2	USB5 Power
3	USB4 GND	4	USB5 Data-
5	USBD4 Data+	6	USB5 Data+
7	USBD4 Data-	8	USB5 GND
9	USB4 Power	10	GND

J17: System Reset Header

PIN No.	Status
1	ON:Reset
2	OFF: Normal

J18: COM Port2 Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	NC

J20: 5VSB Header For ATX

PIN No.	Signal Description
1	ATX PWOK
2	ATX 5VSB
3	PS_ON
4	GND

J21: Front Panel SMBUS Header

PIN No.	Signal Description
1	SMBUS Clock
3	GND
4	SMBUS Data
5	+5V

J22: MIC/Line IN/Line OUT Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	MIC	2	GND
3	Line IN Left	4	GND
5	Line IN Right	6	GND
7	Line OUT Left	8	GND
9	Line OUT Right		

J24: Compact Flash Connector

PIN No.	Signal Description	PIN No.	Signal Description
25	GND	2	D3
24	D4	4	D5
23	D6	6	D7
7	#CS0	8	A10
9	#ATA SEL	10	A9
11	A8	12	A7

13	VCC	14	A6
15	A5	16	A4
17	A3	18	A2
19	A1	20	A0
21	D0	22	D1
23	D2	24	#IOCS16
25	#CD2	26	#CD1
27	D11	28	D12
29	D13	30	D14
31	D15	32	#CS1
33	#VS1	34	#IORD
35	#IOWR	36	#WE
37	INTRQ	38	VCC
39	#CSEL	40	#VS2
41	#RESET	42	IORDY
43	#INPACK	44	#REG
45	#DASP	46	#PDIAG
47	D8	48	D9
49	D10	50	GND

IDE1 Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	RESET#	2	GND
3	PD7	4	PD8
5	PD6	6	PD9
7	PD5	8	PD10
9	PD4	10	PD11
11	PD3	12	PD12
13	PD2	14	PD13
15	PD1	16	PD14
17	PD0	18	PD15
19	GND	20	N/C
21	DREQA	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IOCHRDY	28	GND
29	DACKA	30	GND
31	IRQ14	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HD_LED	40	GND

IDE2 Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	RESET#	2	GND
3	SD7	4	SD8
5	SD6	6	SD9
7	SD5	8	SD10
9	SD4	10	SD11
11	SD3	12	SD12
13	SD2	14	SD13
15	SD1	16	SD14
17	SD0	18	SD15
19	GND	20	N/C
21	DREQA	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IOCHRDY	28	GND
29	DACKA	30	GND
31	IRQ14	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HD_LED	40	GND
41	5V	42	5V
43	GND	44	GND

Chapter 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle WDT operation in software programming.

## 3.1   Intel® Pentium® M or Celeron® M processor

Configuring System Bus

ROBO-6710 uses Intel® Pentium® M or Celeron® M processor series. ROBO-6730 onboard uses Intel® ULV Celeron® M 600MHz processor.

Introducing Intel® Pentium® M processor, a new microprocessor designed from the ground up for mobility, with a mobile-optimized chipset. Intel® mobile processor innovative design techniques allow faster execution of instructions at lower power.

Install or remove your CPU (ROBO-6710):
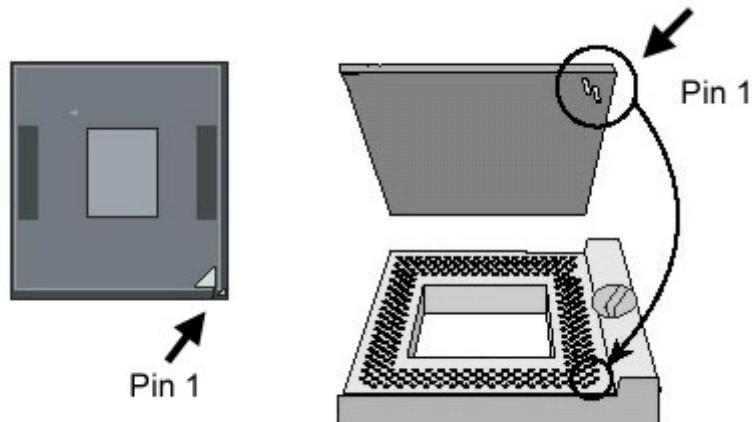
Place the new processor into the socket. Align the processor's Pin 1 with the arrow on the mPGAM 479 socket. The Pin 1 of the processor is identified with an embroidered corner and the Pin 1 of the socket is identified with a small arrow. If the processor does not drop completely into the socket, turn the actuator until the processor drops completely in.

479-pin
mPGAM 479 socket

OPEN / Close
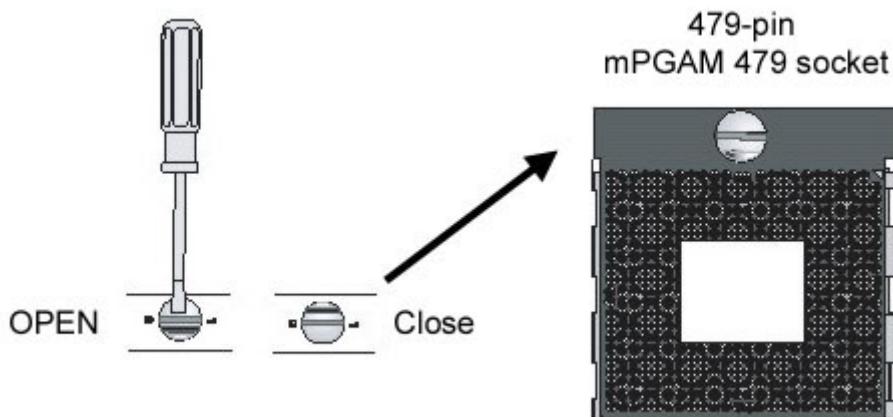
To un-install the current processor, use a screwdriver to disengage (open) the socket actuator, as shown in Figure 1 below. The socket actuator should open after only a half turn or so, and you should then be able to remove the processor with your fingers.

3.2   Main Memory

One SODIMM socket support 200/266 DDR-SDRAM up to 1GB System Memory. ROBO-6710/6730 will automatically detect memory clock, based on the processor and DDR-SDRAM used.

For system compatibility and stability, don't use memory module without brand. You can also use single-sided or double-sided DDR without ECC feature.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedure to install your DDR module into memory socket. Before locking, make sure that the module has been fully inserted into the card slot.

Install your DDR SODIMM module:
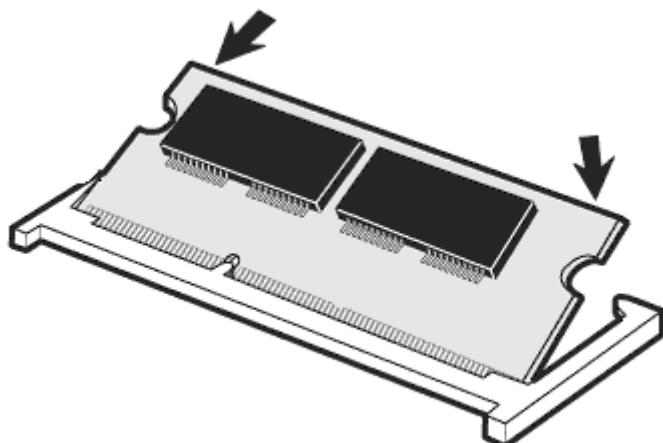
1. The notch in the module fits into a key in the slot
2. Hold the module at a 45-degree angle to the slot and slide it into place.
3. Module should lay flat against the SBC

Notes:

(1) To maintain system stability, do not change any of DRAM parameters in BIOS setup to upgrade system performance without acquiring technical information.

(2) Due to Intel® (Trade Mark) 852GM chipset limitation, the type of DDR-SDRAM with ECC function is not supported. In the event of ECC DDR-SDRAM being adopted, ECC function is NOT supported while ECC DDR-SDRAM can act only as a normal DDR-SDRAM without causing any error.

(3) Due to Intel® (Trade Mark) 852GM chipset limitation, Buffered (Registered) DDR-SDRAM is not supported. Buffered DDR-SDRAM will simply freeze up the system.

3.3 Installing the Single Board Computer

To install your ROBO-6710/6730 into a standard chassis or proprietary environment, you need to perform the following:

Step 1: Check all jumpers setting on proper position
Step 2: Install and configure CPU and memory module on right position
Step 3: Place ROBO-6710/6730 into the dedicated position in your system
Step 4: Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that your SBC is properly inserted and fixed by mechanism. Otherwise, the system might be unstable or do not work due to bad contact of golden finger and PCI-bus slot.

Note:
Please refer to section 3-3-1 to 3-3-3 to install INF/VGA/LAN drivers.

3.3.1 Chipset Component Driver

The chipset on ROBO-6710/6730 is a new chipset that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows-95/98/98SE/2000, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in ROBO-6710/6730 CD-title.

3.3.2   Intel Integrated Graphics GMCH Chip

Using GMCH High performance graphic integrated chipset is aimed to gain an outstanding graphic performance. It is accompanied by shared 8 to 64MB system DDR-SDRAM with Intel DVMT. This combination makes ROBO-6710/6730 an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI VGA card can take over the system display.

Drivers Support

Please find Intel® GMCH driver in the ROBO-6710/6730 CD-title. Drivers support Windows-98/98SE/ME, Windows-NT 3.51/4.0, Windows-2000, OS2, and Linux.

(1) Windows-2000: Please bring up the Device Manager and update graphics drivers.

(2) Linux: Please refer to the related documentation in for graphic drivers installation.

3.3.3   On-board Fast Ethernet Controller

Drivers Support

Please find Intel 82562 driver in /Ethernet directory of ROBO-6710/6730 CD-title. The drivers support Windows-NT 4.0, Windows-98/98SE/ME, Windows-2000, Windows-XP, and Linux.

LED Indicator (for LAN status)

ROBO-6710/6730 provides three LED indicators to report Ethernet interfaces status. Please refer to the table below as a quick reference guide.
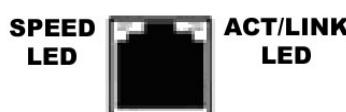
I82562	Name of LED	Operation of Ethernet Port	
		ON	OFF
Green	Link/Active LED	Linked	Active (Blinking)
Yellow	Speed LED	100 Mbps	10 Mbps

3.3.4 Realtek AC'97 Codec Controller

Realtek ALC202A Audio Controller supports this on-board Audio function.

<u>**Drivers Support**</u>

Please find Sound driver in \Audio\AC97\Realtek directory of ROBO-6710/6730 CD-title. The drivers support Windows-NT 4.0, Windows-95/98/98SE/2000/XP and Linux.

3.4 Clear CMOS Operation

The following table indicates how to enable/disable CMOS Clear Function hardware circuit by putting jumpers at proper position.

JP7	Function
Off	Normal Operation ★
1-2 Short	Clear CMOS contents

To correctly operate CMOS Clear function, users must turn off the system, move JP7 jumper to short pin 1 and 2. To clear CMOS contents, please turn the power back on and turn it off again for AT system, or press the toggle switch a few times for ATX system. Move the JP7 back to Off (Normal Operation) and start the system. System will then produce a "CMOS Check Sum Error" message and hold up. Users may then follow the displayed message to load BIOS default setting.

3.5 WDT Function

The working algorithm of the WDT function can be simply described as a counting process. The Time-Out Interval can be set through software programming. The availability of the time-out interval settings by software or hardware varies from boards to boards.

ROBO-6710/6730 allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset, when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process. A well-written WDT program should keep the counting process running under normal condition. WDT should never generate a system reset signal unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately. To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

Additionally, there are maximum 2 seconds of counting tolerance that should be considered into user' application program. For more information about WDT, please refer to Winbond W83627HF data sheet.

There are two PNP I/O port addresses that can be used to configure WDT,
1) 0x2E:EFIR (Extended Function Index Register, for identifying CR index number)
2) 0x2F:EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);
// Assign Pin 89 to be a WDTO
outp(0x002E, 0x2B);
outp(0x002F, inp(0x002F) & 0xEF);
// Select Logic Device 8
outp(0x002E, 0x07);
outp(0x002F, 0x08);
// Active Logic Device 8
outp(0x002E, 0x30);
outp(0x002F, 0x01);
// Select Count Mode
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | ( Count-mode Register  & 0x08));
// Specify Time-out Value
outp(0x002E, 0xF6);
outp(0x002F,  Time-out Value Register );
// Disable WDT reset by keyboard/mouse interrupts
outp(0x002E, 0xF7);
outp(0x002F, 0x00);
// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

Definitions of Variables:

Value of | Count-mode Register |:
1) 0x00 -- Count down in seconds (Bit3=0)
2) 0x08 -- Count down in minutes (Bit3=1)
Value of | Time-out Value Register |:
1) 0x00 -- Time-out Disable
2) 0x01~0xFF -- Value for counting down

3.6   GPIO

The ROBO-6710/6730 support 8 programmable high-driving GPIO that can be individually configured to perform a simple basic I/O function. Users can configure each individual port to become an input or output port by programming register bit of I/O Selection. To invert port value, the setting of Inversion Register has to be made. Port values can be set to read or write through Data Register.

```
#include <stdio.h>
#include <dos.h>

int main(void)
{
    int x,outdata,indata;
    printf("Now output data to GPIO Port ...");
    //   Enter the extended function mode
    outport(0x2e,0x87);
    outport(0x2e,0x87);
    //   GPIO multiplexed pin selection
    outport(0x2e,0x2a);
    outport(0x2f,0xff);                        //GP10 - GP14 enable

    //   Enable GPIO port1
    outport(0x2e,0x30);
    outport(0x2f,0xff);                        //Enable GPIO function


    //   Select the logical device
    outport(0x2e,0x07);
    outport(0x2f,0x07);                // Device 7
```

```
//   GP10 - GP17 I/O select
printf("\nSet Port10 To Port17 input or output :");
scanf("%x",&x);
outport(0x2e,0xf0);
printf("\n x= %x",x);
outport(0x2f,x);                    //GP10 - GP17 output

printf("\n Set output data :");
scanf("%x",&x);
//   set GP10-GP13 Output data
outport(0x2e,0xf1);
outport(0x2f,x);


indata=inport(0x2f);
printf("\n Get the Port input data =%x \n",indata);

printf("Enter to test Port LED ....\n");
getch();
printf("LED test Now...");
outdata=0x01;
for (x=0;x<20;x++)
{
  printf(".");
  outport(0x2e,0xf1);
  outport(0x2f,outdata);
  delay(300);
  outport(0x2e,0xf1);
  outdata=outdata<<1;
  if (outdata==0x10) outdata=0x01;
}

//Exit the extended function mode
outport(0x2e,0xaa);


return 0;
}
```

3.7   On-Board USB 2.0 Controller

Drivers Support

Please find Intel ICH4 USB driver in /USB20 directory of ROBO-6710/6730 CD-title.
The drivers support Windows-2000 and Windows-XP.

Chapter 4
BIOS Setup Information

ROBO-6710/6730 is equipped with the AWARD BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily.   This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, ROBO-6710/6730 communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1   Entering Setup

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try   "COLD START" again by turning it OFF and then ON, or touch the "RESET" button.   You may also restart from "WARM START" by pressing   <Ctrl>, <Alt>, and <Delete> keys simultaneously.   If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system.   The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2   Main Menu

Once you enter ROBO-6710/6730 AWARD BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

Phoenix- AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Fail-Safe Defaults
▶ Advanced Chipset Features	Load Optimized Defaults
▶ Integrated Peripherals	Set Supervisor Password
▶ Power Management Setup	Set User Password
▶ PnP/PCI Configurations	Save & Exit Setup
▶ PC Health Status	Exit Without Saving

ESC : Quit   ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup

Time, Date, Hard Disk Type …

Note:
It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

4.3   Standard CMOS Setup Menu

This setup page includes all the items in standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

<div align="center">

Phoenix- AwardBIOS CMOS Setup Utility
Standard CMOS Features

</div>

		Item Help
Date (mm:dd:yy)	Fri, Dec 31 2004	
Time (hh:mm:ss)	10 : 29 : 50	
		Menu Level ▶
▶ IDE Primary Master	[ST320014A]	
▶ IDE Primary Slave	[CD-540E]	Change the day, month,
▶ IDE Secondary Master	[None]	year and century
▶ IDE Secondary Slave	[None]	
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Floppy 3 Mode Support	[Disabled]	
Video	[EVG/VGA]	
Base Memory	640K	
Extended Memory	228352K	
Total Memory	229376K	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

■ **Menu Selections**

Item	Options	Description
Date	mm:dd:yy	Change the day, month, year and century
Time	hh:mm:ss	Change the internal clock
IDE Primary Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
IDE Secondary Master	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
IDE Secondary Slave	Options are in its sub menu	Press <Enter> to enter the next page for detail hard drive settings
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Press <Enter> to enter the next page for detail hard drive settings
Floppy 3 Mode Support	Disabled Drive A Drive B Both	
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Base Memory	640K	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4   IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as hard disk drive or CDROM drive. It uses a separate sub menu to configure each hard disk drive.

<div align="center">

Phoenix- AwardBIOS CMOS Setup Utility
IDE Primary Master

</div>

IDE HDD Auto-Detection	[Press Enter]		Item Help
IDE Primary Master	[Auto]		Menu Level ▶
Access Mode	[Auto]		
			To atuo-detect the HDD's size, head … on this channel
Capacity	20021MB		
Cylinder	38792		
Head	16		
Precomp	0		
Landing Zone	38791		
Sector	63		

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

■ **Menu Selections**

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0	Set the number of cylinders for this hard

	Max = 65535	disk
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

4.5 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced BIOS Features

		Item Help
▶ CPU Feature	[Press Enter]	
Virus Warning	[Disabled]	
CPU Cache	[Enabled]	Menu Level ▶
Quick Power On Self Test	[Enabled]	
First Boot Device	[HDD-0]	
Second Boot Device	[HDD-1]	
Third Boot Device	[Floppy]	
Boot Other Device	[Enabled]	
Swap Floppy Seek	[Disabled]	
Boot Up Floppy Seek	[Disabled]	
Boot up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/sec)	6	
X Typematic delay (Msec)	250	
Security Option	[Setup]	
APIC Mode	[Enabled]	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
Report No FDD For WIN 95	[No]	
Small Logo(EPA) Show	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Virus Warning

It allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third Boot Device

Select your Boot Device Priority.

The choice: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2 HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN and Disabled.

Boot Other Device

Select Your Boot Device Priority.

The choice: Enabled, Disabled.

Swap Floppy Drive

If the system has two floppy drives, choose enable to assign physical driver B to logical drive A and Vice-Versa.

The choice: Enabled, Disabled.

Boot Up Floppy Seek

Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control Gate A20 and Normal – a pin in the keyboard controller controls Gate A20. Default is Fast.

The choice: Normal, Fast.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller – When enabled, the typematic rate and typematic delay can be select.

The choice: Enabled, Disabled.

Typematic Rate (Chars/sec)

The rate at which character repeats when you hold down a key.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30.

Typematic delay (Msec)

The delay before key strokes begin to repeat.

The choice: 250, 500, 750, and 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

APIC Mode

The choice: Enabled, Disabled.

MPS Version Control For OS

The choice: 1.1 / 1.4.

OS Select For DRAM > 64MB

Select OS/2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD for WIN 95

The choice: No, Yes.

Small Logo (EPA) Show

The choice: Enabled, Disabled.

4.6 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the Intel 82852GM Chipset. This Chipset manages bus speeds and access to system memory resources, such as DRAM (DDR SDRAM) and the external cache. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced Chipset Features

		Item Help
DRAM Timing Selectable	[By SPD]	
X CAS Latency Time	[2]	
X Active to Precharge Delay	[6]	Menu Level ▶
X DRAM RAS# to CAS# Delay	[3]	
X DRAM RAS# Precharge	[3]	
System BIOS Cacheable	[Enabled]	
Video BIOS Cacheable	[Enabled]	
Memory Hole At 15M-16M	[Disabled]	
Delayed Transaction	[Enabled]	
Delay Prior to Thermal	[16 Min]	
AGP Aperture Size (MB)	[64]	
** On-Chip VGA Setting **		
On-Chip VGA	[Enabled]	
On-Chip Frame Buffer Size	[32MB]	
Boot Display	[CRT]	
Panel Scaling	[Auto]	
Panel Type	[640X480 LVDS]	
FWH Write Protection	[Enabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

This chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

DRAM Timing Selectable

This option provides DIMM plug-and-play support by serial presence detect (SPD) mechanism via the system management bus (SMBUS) interface.

The choice: Manual, By SPD.

CAS Latency Time

This option controls the number of SCLKs between the time a read command is sampled by the SDRAMs and the time the GMCH samples correspondent data from the SDRAMs.

The choice: 2, 2.5.

Active to Precharge Delay

This is to DDR standard accordingly.

The choice: 5, 6, 7.

DRAM RAS# to CAS# Delay

This option controls the number of SCLKs (SDRAM Clock) from a row activate command to a read or write command. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. Normally, the option will be set to Auto.

The choice: 2, 3.

DRAM RAS# Precharge

This option controls the number of SCLKs for RAS# precharge. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. It is set to auto normally.

The choice: 2, 3.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Video BIOS Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. "Disabled" to ignore this BIOS caching function.

The choice: Enabled, Disabled.

Memory Hole At 15-16M

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The choice: Enabled, Disabled.

Delayed Transaction

Select "Enabled" to enable delay transaction. This will enhance performance for data transmission between different PCI bus.

The choice: Enabled, Disabled.

Delay Prior to Thermal

The choice: 4 Min, 8 Min, 16 Min, and 32 Min.

AGP Aperture Size (MB)

The choice: 4, 8, 16, 32, 64, 128, and 256.

On-Chip VGA

The choice: Enabled, Disabled.

On-Chip Frame Buffer Size

Users can set the display memory size that shared from main memory.

The choice: 1MB, 4MB, 8MB, 16MB, and 32MB.

Boot Display

The choice: CRT, LVDS, and CRT+LVDS.

Panel Scaling

The choice: Auto, On, Off.

Panel Type

The choice: 640X480 LVDS, 800X600 LVDS, 1024X768 LVDS, 1280X1024 LVDS, 1400X1050 LVDS, 1600X1200 LVDS.

FWH Write Protection

The choice: Enabled, Disabled.

4.7 Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility
Integrated Peripherals

▶ OnChip IDE Device	[Press Enter]	Item Help
▶ Onboard Device	[Press Enter]	
▶ Super IO Device	[Press Enter]	Menu Level ▶

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
OnChip IDE Device

On-Chip Primary PCI IDE	[Enabled]	Item Help
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	Menu Level ▶
IDE Primary Slave UDMA	[Auto]	
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	
IDE Secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
IDE HDD Block Mode	[Enabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

OnChip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels.   Select Enabled to activate the primary IDE interface.   Select Disabled to deactivate this interface.

The choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports.   Modes 0 through 4 provide successively increased performance.   In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver).   If your hard drive and your system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choice: Auto, Disabled.

IDE HDD Block Mode

If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Onboard Device

		Item Help
USB Controller	[Enabled]	
USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	Menu Level ▶
Onboard AC97 Control	[Enabled]	
Onboard LAN Control	[Enabled]	
Init Display First	[PCI Slot]	
Onboard Lan Boot ROM	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

USB Controller

This item allows you to enable/disable USB (Universal Serial Bus) function.

The choice: Enabled, Disabled.

USB 2.0 Controller

This entry is for disable/enable EHCI controller only. This BIOS itself may/may not have high speed USB support built in, the support will be automatically turn on when high speed device were attached.

The choice: Enabled, Disabled.

USB Keyboard Support

This item allows you to enable USB keyboard function under POST, BIOS setup menu, DOS, or Windows-NT with no USB driver loaded.

The choice: Enabled, Disabled.

USB Mouse Support

This item allows you to enabled USB Mouse function under POST, BIOS Setup menu, DOS, or Window-NT with no USB driver loaded.

The choice: Enabled, Disabled.

Onboard AC97 Control

This item allows you to enable AC97 Audio function.

The choice: Enabled, Disabled.

Onboard LAN Control

This item allows you to enable LAN function.

The choice: Enabled, Disabled.

Init Display First

This item allows you to select the first display port to be initialized.

The choice: PCI Slot, Onboard/AGP.

Onboard Lan Boot ROM init

Decide whether to invoke the boot ROM of the onboard LAN chip.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Super IO Device

POWER ON Function	[BUTTON ONLY]	Item Help
X KB Power ON Password	Enter	
X Hot Key Power ON	Ctrl-F1	Menu Level ▶
Onboard FDC Controller	[Enabled]	
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[Normal]	
X RxD, TxD Active	Hi, Lo	
X IR Transmission Delay	Enabled	
X UR2 Duplex Mode	Half	
X Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	
X EPP Mode Select	EPP1.7	
X ECP Mode Use DMA	3	
Watch Dog Timer Select	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Power On Function

This item allows you to select different power on scheme using ATX power supply.

Password	Power on using customized password string
Hot Key	Power on using special customized key
Mouse Left	Power on using mouse left click
Mouse Right	Power on using mouse right click
Any Key	Power on using any keyboard key
Button Only	Power on by power Button
Keyboard 98	Power on by keyboard 98 [Only power ON/OFF key]

Keyboard Power On Password

In the event of "Power On Function" being configured as "Password", this item will be enabled for tuning. Press "Enter" key to enter a customized password, and confirm again when being asked. In the case that the confirmed password does not match the configured one, the message of "Password Disabled – Press any key to continue…" will be prompted.

Hot Key Power On

In the event of "Power On Function" being configured as "Hot Key", this item will be enabled for tuning.

The choice: Ctrl-F1 to Ctrl-F12.

Onboard FDC Controller

This item allows you to enable/disable onboard Floppy disk controller.

The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows users to select Infrared transmission mode.

Normal	Disable Infrared function
IrDA	Select IrDA mode transmission
ASKIR	Select ASKIR mode transmission

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available:

Hi, Hi	High rate for receiving / High rate for transmitting
Hi, Lo	High rate for receiving / Low rate for transmitting
Lo, Hi	Low rate for receiving / High rate for transmitting
Lo, Lo	Low rate for receiving / Low rate for transmitting

IR Transmission Delay

This option will be available when IR is enabled.

The choice: Enabled, Disabled.

UR2 Duplex Mode

The available choices are full duplex mode and half duplex mode

The choice: Full, Half.

Use IR Pins

The available choices are IR-Rx2Tx2/ RxD2, TxD2.

The choice: IR-Rx2Tx2 / RxD2, TxD2.

Onboard Parallel Port

This item allows you to configure I/O address of the onboard parallel port.

The choice: Disabled, 378/IRQ7, 278/IRQ5, and 3BC/IRQ7.

Parallel Port Mode

There are four different modes for the onboard parallel port :

SPP	Switch to SPP mode
EPP	Switch to EPP mode
ECP	Switch to ECP mode
ECP + EPP	Switch to ECP + EPP mode
Normal	Switch to Normal mode

EPP Mode Select

Select different version of EPP mode.

The choice: EPP1.7, EPP1.9.

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

The choice: 3, 1.

Watch Dog Timer Select

This BIOS testing option is able to reset the system according to the selected table.

The choice: Disabled, 10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, and 4 Min.

4.8 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix- AwardBIOS CMOS Setup Utility
Power Management Setup

		Item Help
ACPI Function	[Enabled]	
ACPI Suspend Type	[S1(POS)]	
X Run VGABIOS if S3 Resume	NO	Menu Level ▶
Power Management	[User Define]	
Video Off Method	[DPMS]	
Video Off In Suspend	[Yes]	
Suspend Type	[Stop Grant]	
Suspend Mode	[Disabled]	
HDD Power Down	[Disabled]	
Soft-Off by PWR-BTTN	[Instant-Off]	
PWRON After PWR-Fail	[Off]	
CPU THRM-Throttling	[50%]	
Wake-up by Onboard LAN	[Disabled]	
Power On by Ring	[Disabled]	
X USB KB Wake-Up From S3	Disabled	
Resume by Alarm	[Disabled]	
X Date(of Month) Alarm	0	
X Time(hh:mm:ss) Alarm	0 : 0 :0	
** Reload Global Timer Events **		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	
Secondary IDE 0	[Disabled]	
Secondary IDE 1	[Disabled]	
FDD,COM,LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

ACPI Suspend Type

To decide which ACPI suspend mode to use.

The choice: S1(POS), S3(STR).

Run VGA BIOS if S3 Resume

The choice: Auto, Yes, No.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Defined	Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This allows user to enable/disable video off in Suspend Mode.

The choice: Yes, No.

Suspend Type

Two options are available: Stop Grant and PwrOn Suspend.

The choice: Stop Grant, PwrOn Suspend.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, and 1 Hour.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

On	System automatically restores power back
Off	System stays at power –off

CPU THRM-Throttling

When the CPU temperature reaches the preset standard. The CPU usage will be reduced to a selected level to avoid overheating.

The choice: 82.5%, 75.0%, 62.5%, 50.0%, 37.5%, 25.0%, and 12.5%.

Wake-Up by Onboard LAN

This option can be enabled to support Wake Up by On-board LAN.

The choice: Disabled, Enabled.

Power On by Ring

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Modem.

The choice: Enabled, Disabled.

USB KB Wake-up From S3

The choice: Enabled, Disabled.

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

Time(hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0 ~59).

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

PCI PIRQ[A-D]#

This option can be used to detect PCI device activities. If they are activities, the system will go into sleep mode.

The choice: Enabled, Disabled.

4.9   PnP/PCI Configurations

This section describes configuring the PCI bus system.   PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system that allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix- AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	Menu Level ▶
X IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.
Assign IRQ For VGA		

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Reset Configuration Data

Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

The choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure all the boot and plug and play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

IRQ Resources

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug AND play standard whether designed for PCI or ISA bus architecture.

Enter for more options   IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/
                           IRQ-12/IRQ-14/IRQ-15 assigned to.

The choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the plug and play standard whether designed for PCI or ISA bus architecture

The choice: Enabled, Disabled.

Assign IRQ For VGA

To enable VGA IRQ assignation by selecting enabled.

The choice: Enabled, Disabled.

4.10   PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

CPU Warning Temperature	[Disabled]	Item Help
Current System Temp.	37℃/98℉	
Current CPU Temperature	39℃/102℉	Menu Level ▶
Current System FAN Speed	0 RPM	
CPU Vcore	1.01 V	
+1.05 V	1.04 V	
+3.3 V	3.29 V	
+5 V	5.16 V	
+12 V	12.28 V	
VBAT(V)	3.07 V	
5VSB(V)	5.09 V	
CPU Throttle Temperature	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

CPU Warning Temperature

This item allows you to set a temperature above which the system will start the beeping warning. Default setting is disabled. This function will only with "ACPI" power management and "S3 (STR)" suspend type.

The choices : Disabled, 50℃/122℉, 53℃/127℉, 56℃/133℉, 60℃/140℉, 63℃/145℉, 66℃/151℉, 70℃/158℉.

CPU Throttle Temperature

This item allows you to set a temperature above, whom the system will operate, in lower speed immediately. Default setting is disabled. This function will only with "ACPI" power management and "S3 (STR)" suspend type.

The choice: Disabled, 60℃/140℉, 65℃/149℉, 70℃/158℉, 75℃/167℉ .

4.11   Frequency/Voltage Control

Phoenix- AwardBIOS CMOS Setup Utility
Frequency / Voltage Control

Spread Spectrum [Disabled]	Item Help
	Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.

The choice: Enabled, Disabled.

4.12 Default Menu

Selecting "Defaults" from the main menu shows you two options, which are described below,

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ?   N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ?   N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.13 Supervisor/User Password Setting

You can set either supervisor or user password, or both of then.   The differences between are:

Set Supervisor Password: can enter and change the options of the setup menus.

Set User Password: just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory.   You will be asked to confirm the password.   Type the password again and press <Enter>.   You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password.   A message will confirm the password will be disabled.   Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup.   This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted.   This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3).   If the Security option is set to "System", the password will be required both at boot and at entry to Setup.   If set to "Setup", prompting only occurs when trying to enter Setup.

4.14   Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)?   Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off.   The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)?   N

This allows you to exit Setup without storing in CMOS any change.   The previous selections remain in effect.   This exits the Setup utility and restarts your computer.

Chapter 5
Trouble Shooting

This chapter provides you a few useful tips to quickly get your ROBO-6710/6730 running with no failure. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

5.1　　Quick installation Guide

Power connector

ROBO-6710/6730 series requires power drawing from the power connectors (CN1), **please connect the IDE Peripheral power connector. If this connector is not connected, then the system might fail to boot up.** (Figure 5-1) !!
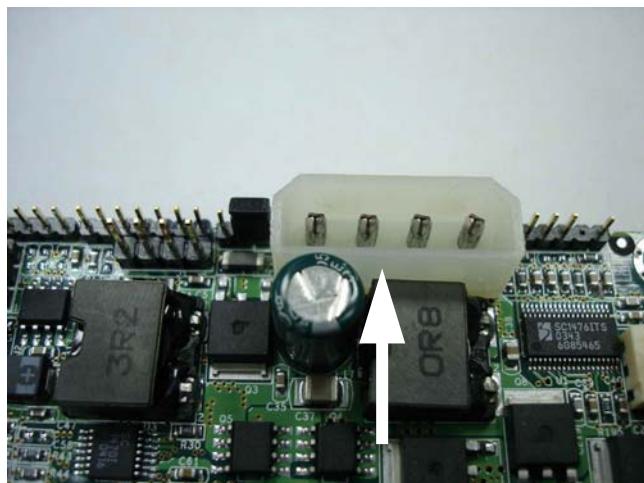
Figure 5-1

ATX Power Setting

This section would be more likely to introduce you how to set up ATX mode on your ROBO-6710/6730 series.　This setting is for you when use the backplane with the system board. Please refer to the following instruction.

Step 1: If you want to use ATX mode, please removed the jumper on pin 3 (PS-ON) and pin 4 (GND) of backplane ATX P/S control connector. And connect 4 pins power cable to the 5VSB Header For ATX. (Figure 5-2) Basically, our backplane products have the default setting to set the jumper on the AT mode.
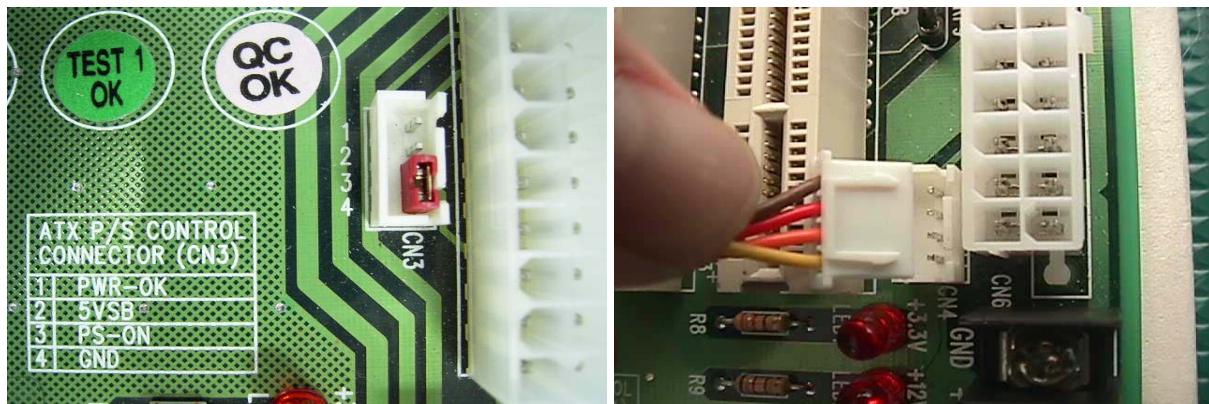
Figure 5-2

Step 2: And then use 4-pin power cable to connect both ATX P/S Control Connector on backplane and 5VSB Header For ATX (J20) on Signal Board Computer. (Figure 5-3)
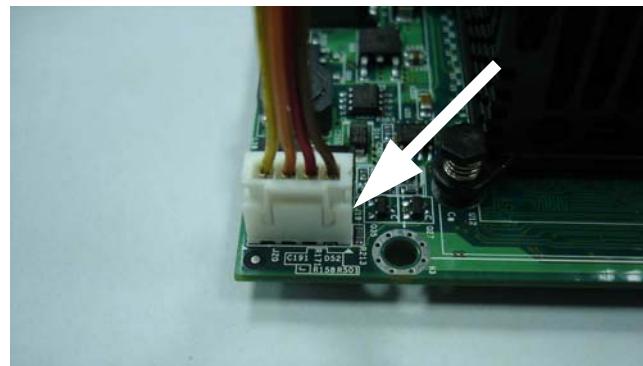
Figure 5-3

Step 3: Please adjust **AT & ATX Selector** on " JP1" to short 3-5, 4-6 pins, then it can support ATX power scheme. (Figure 5-4)
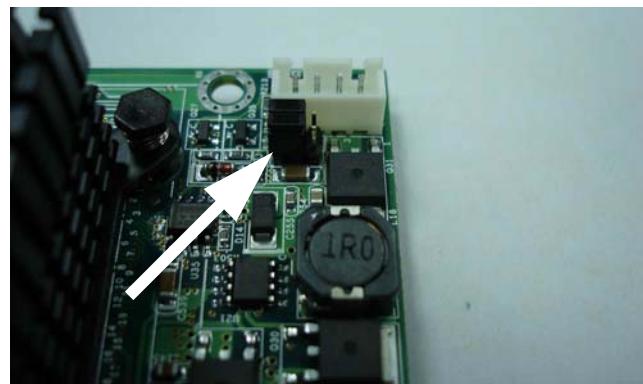
Figure 5-4

Step 4: Please check the connection of the IDE Peripheral power connector properly (CN1), which shows on Figure 5-1.

Step 5: Connect TOGGLE SWITCH with J7 connector on ROBO-6710/6730 series (Figure 5-5), which is used to power on ATX Power Supply.
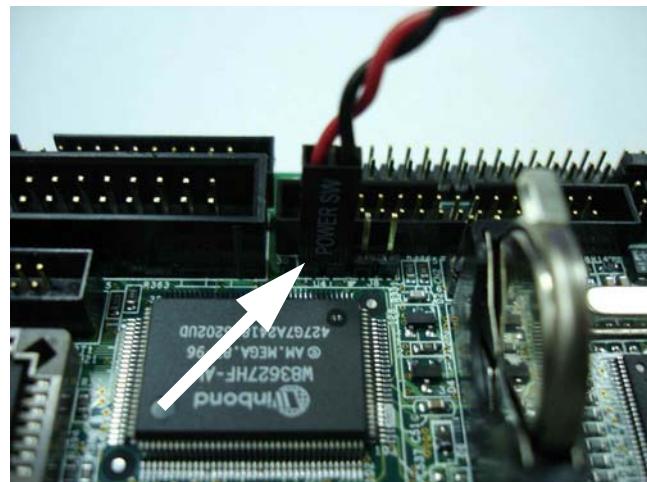
Figure 5-5

Step 6: The figure below is the TOGGLE SWITCH, which is used to switch the ATX Power on/off for SBC. Usually the TOGGLE SWITCH is located on the chassis front panel. Pressing the switch button once will turn power on, and press again to turn it off. (Figure 5-6)
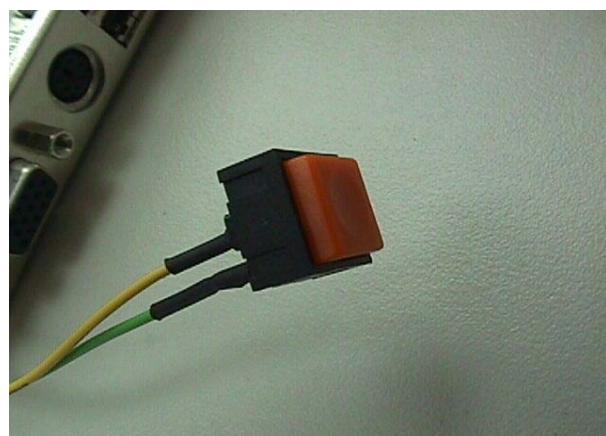
Figure 5-6

AT Power Setting

This section will introduce you how to quickly and appropriately set up AT power on your system.

Step 1: If you were currently using ATX mode, please remove 4 pins power cable from the 5VSB Header For ATX and from the backplane, and then put a jumper back on pin 3 (PS-ON) and pin 4 (GND) of Backplane ATX P/S control connector. (Figure 5-7) Basically, our backplane products have the default setting to set the jumper on the AT mode.
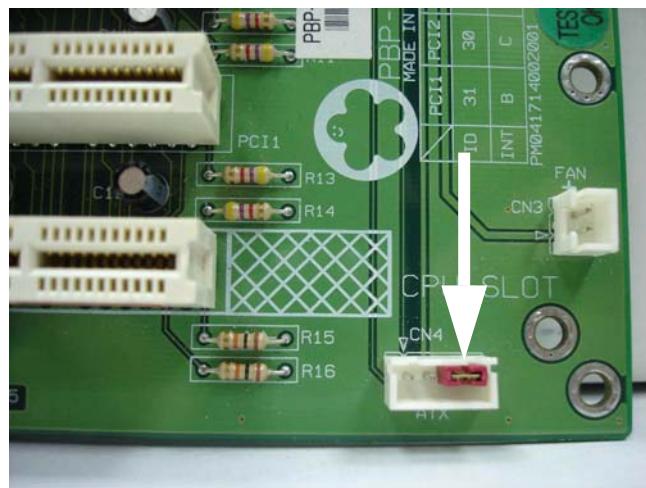
Figure 5-7

Step 2: Please adjust AT/ATX Jumper on " JP1" to short 1-3, 2-4 pins, then it can support AT power scheme. (Figure 5-8)

Figure 5-8

Step 3: Turn on the Power Supply, then system will boot up. Generally, when using AT mode Power Supply, there will be a power button connect to the front panel.

Note:
If you want to switch the AT/ATX mode, please clean CMOS setting by short and remove the "JP7" jumper after adjusted the Power setting. Otherwise, system might not boot up properly.

Stand-alone Setting
The purpose of system stand-alone function is to identify the root cause by isolating the board from other possible system devices such as PCI device, Backplane, and so on. Please refer the following steps to make system at stand-alone status.

Please check Power Consumption of processors, because the wires of 4-pin peripheral power connector (CN1) might not withstand too much current on the 5V loading!

Step 1: Please connect 4 pins IDE peripheral power connector to CN1 in order to make system stand-alone (See Figure 5-9)
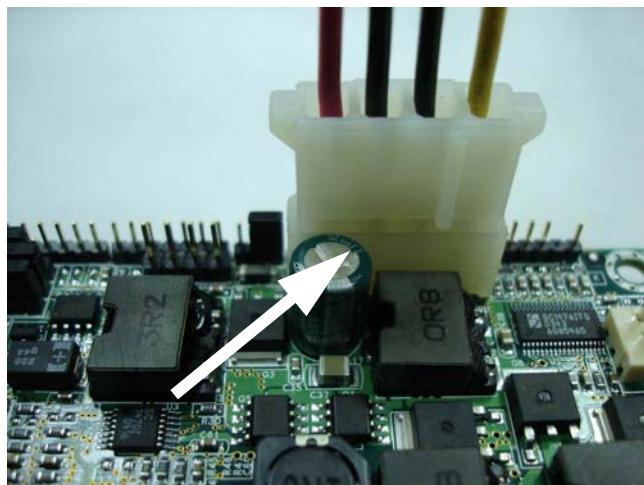

Figure 5-9

Step 2: If you are using ATX power, please short PS-ON signal and Ground on ATX power connector (As Figure 5-10), and turn on AC power switch of ATX power supply to let system boot up. If you are using AT power supply, you can simply turn on the power on AT power supply to boot up the system.
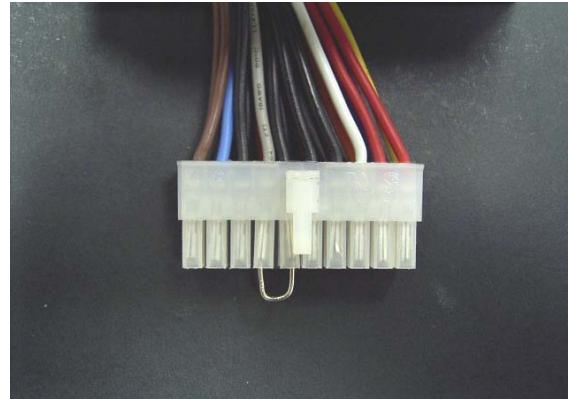
Figure 5-10

Note:

Due to the fact of different Power Supply Units had different definition on pin assignments. Therefore, please check Pin assignment on Power Supply or ask your vendor.

Unboot problem

Symptom: After changing power mode from ATX to AT, my system is just not working.

Solution: Due to ICH4 design, when you change your power mode from ATX to AT or from AT to ATX, you have to clean your CMOS in order to make your system boot up properly. To clean CMOS, please short the "JP7" for a moment, and then remove it.

Symptom: SBC keeps beeping, and no screen has shown.

Solution: In fact, each beep sound represents different definition of error message. Please refer to table as following:

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Symptom: There is neither no beeps nor screen output.

Solution: Indeed, you might want to check the system with the stand-alone to identify the root cause by isolating the board from other possible system devices such as PCI device, Backplane, and so on. If the system still cannot boot up, please fill out RMA form which is provides on Portwell website, and then send back to Portwell Inc. as a RMA goods. Besides, you also visit RMA site (http://www.portwell.com.tw/rma/login.asp) to check RMA report if necessary.

Backplane

ROBO-6710/6730 series is a half-sized Signal Board Computer, and therefore is only able to run on PICMG PCI Backplane. To know whether your Backplane is PICMG PCI Backplane, please contact with vendor or manufacturer.

Regard to our backplane products, the PBP-04P is the specification backplane that made for the half-sized Single Board Computers. To use the backplane with ROBO-6710/6730, please plug the half-sized Single Board Computer on the "CPU-SLOT" which marked on the PBP-04P.

Please check the below picture for the backplane. (See Figure 5-11) In the picture, you can see the marked "CPU-SLOT" and the 4-Pin ATX power connector. Please follow the above instructions to connect the SBC with the backplane.
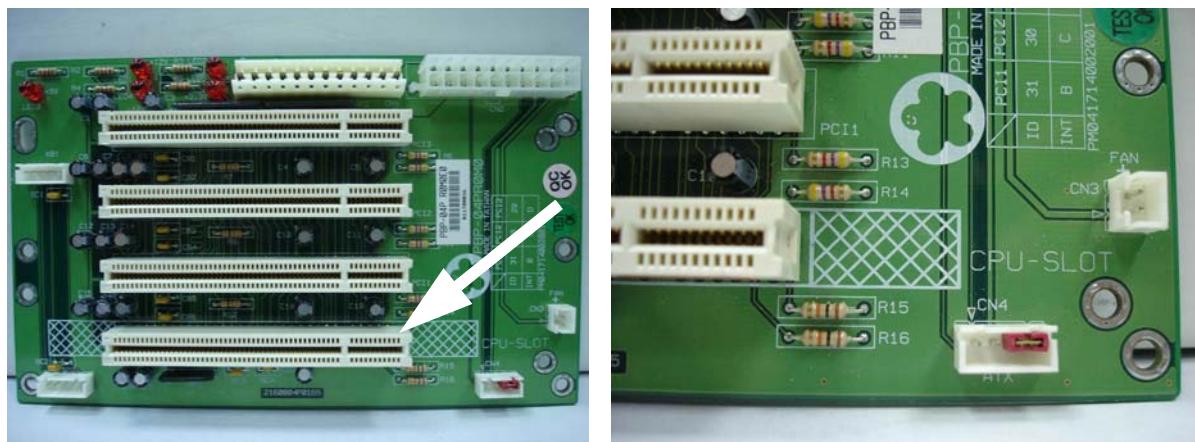
Figure 5-11

5.2   Frequency Asking Questions

**Q: Why the system could not work with Intel® Pentium® M Processor?**

A: There is a jumper setting of the "JP3", which just beside the "CN1" power connector on the top of the system board. Please check the Jumper Setting for "JP3". Please short the jumper "JP3" to enable the Mobile Pentium MPM Support. After changed the CPU, please clear the CMOS setting by the "JP7" jumper to reset the BIOS setting for CPU detection. Please check the "JP3"default setting on ROBO-6710/6730, both of them set default to short 1-2?
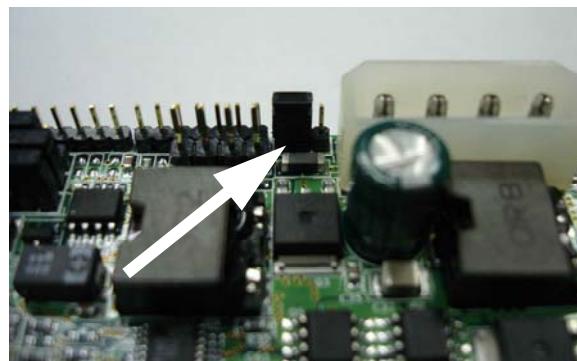
To short this jumper setting to the 2-3 for support "DOTHAN" core is required for both Intel® Celeron® M Processor, and Intel® Pentium® M Processor. Please check and make sure this jumper setting when use the Intel® Celeron® M Processor, or Intel® Pentium® M Processor on the ROBO-6710 with mPGA479M socket board. The next-generation Intel Pentium M processor, code-named Dothan. Built using Intel's advanced 90-nanometer manufacturing technology, Dothan has smaller transistors and employs a strained silicon technique to enable higher performance headroom. With 140 million transistors, Dothan will also feature micro-architectural enhancements and a 2MB power-optimized, integrated Level 2 cache for faster memory access.

For more information on the processor, please check the Intel Web Site for more detail: http://www.intel.com/products/notebook/processors/index.htm

On the contrary, please short the jumper "JP3" to 1-2 for using the ROBO-6730 with the Onboard ULV Intel® Celeron® M Processor; or support "BANIAS" core for using Intel® Pentium® M processor Ultra Low Voltage processor on the ROBO-6710.
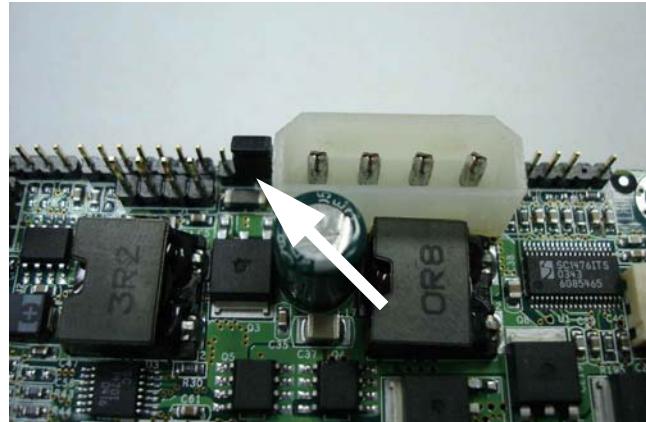
Q: How can I build up an AT system using ATX power supply

A: Do not forget to move "JP1" of ROBO-6710/6730 back to short on 1-3, 2-4 short (support AT function).

If the ATX power supply has a switch, such as ORION-330ATX-12V, do not remove the jumper of Backplane connector in the Figure 5-2, and use the power supply switch as the system power on switch.

In all cases, users may apply a 2-pin AT (on/off) switch over pin-3 and pin-4 of the Backplane connector in the Figure 5-2. However, power supply switch needs to be moved to "on", if there is one.

Q: OK. I have finished up hardware installation, but I got nothing when I power on the system. Why?

A: There are thousands of different reasons to get this power on failure.

1. Check ROBO-6710/6730 jumper, JP1. For AT power supply or ATX power supply used for AT system, JP1 needs to be at 1-3 and 2-4. Otherwise, it needs to be at 3-5 and 4-6 for ATX mode. Incorrect power setting will not allow you to power on the system.
2. Double check if every connector is attached with the correct cable.
3. If you have changed processor with different system clock, please short JP7 (CMOS clear Jumper), and power on the system to clear CMOS (move on/off switch from off to on for AT mode, or toggle the switch for ATX mode); then power off the system, remove JP7 jumper, and power on again. This way to process the action for "Clear the CMOS Setting".

Q: I connect two IDE devices over one IDE flat cable, but the system either does not start, or just hangs from time to time. Why?

A: Make sure that you have configured the two IDE devices as a master and a slave, respectively.

Q: I am using an ATA-66 (or 100) hard drive, how can I know that ATA-66 function is started??

A: You need to use the 80-pin ATA-66 IDE flat cable to have this function ready. During POST, you can see ATA-66 (or 100) message while hard drive is being detected. Besides, after Microsoft series OS installation successfully, you must install ATA-66/100 driver, then the function can be active.

Q: After inserting Compact-Flash, why doesn't it work at all?

A: Compact-Flash is occupied with the master device of IDE Secondary channel. If there is any device occupying this Secondary IDE Master channel, please remove it or set it as a slave device.

Q: When I try to boot from Removable USB HDD device, why is it not working?

A: Please first adjust the BIOS setting of "First Boot Device" to "USB-HDD"(USB-Floppy Drive, USB-CDROM, etc.). In additional, some USB devices will need more power input on the 5V current. Please check the USB-HDD connection cable with extra USB power connector.

Q: How can I use the SCSI interface for boot device?

A: You need to plug the add-on SCSI card and SCSI HDD properly, and connect the SCSI flat cable with Terminator to the SCSI HDD, which to have this function ready. When you are using the SCSI devices, please connect the SCSI Flat cable with Terminator to the SCSI HDD. When system boot-up; the system will initialize the SCSI Utility to detect the HDD. Use the SCSI Utility to configure the HDD setting.

In the BIOS setting, please set the "First Boot Device" as from the "SCSI". During POST, you can see the message while the SCSI Utility is running and the SCSI HDD is being detected.

Besides, when install the Microsoft series OS; please click "F6" hotkey to Install the SCSI driver from the beginning. You must install the SCSI driver properly, and then the function can fully active.

5.3   BIOS Setting

It is assumed that users have correctly adopted modules and connected all the device cables required before turn on the power. CPU, CPU fan, CPU fan power cable, SO-DIMM RAM, keyboard, mouse, floppy drive, IDE hard disk, printer, VGA connector, device power cables, or ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with ROBO-6710/6730, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and pressed "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the floppy drive, COM1/COM2 ports, parallel port, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are:

disable COM1 serial port to release IRQ #4
disable COM2 serial port to release IRQ #3
disable parallel port to release IRQ #7
disable PS/2 mouse to release IRQ #12,
…, etc.

Interrupt Request Lines (IRQ)

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System Counter
IRQ #1	Keyboard
IRQ #2	Programmed Controller
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	PS/2 Mouse (Shareable)
IRQ #6	Floppy Disk Controller
IRQ #7	Parallel port Controller (Shareable)
IRQ #8	CMOS Clock
IRQ #9	ACPI Controller (Shareable)
IRQ #10	VGA controller (Shareable)
IRQ #11	Ethernet Controller (Shareable)
IRQ #12	Audio Media controller (Shareable)
IRQ #13	Data Processor
IRQ #14	Primary IDE Controller
IRQ #15	Secondary IDE Controller (Shareable)

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers. The IRQ list will show on the Post sequences as system hardware checking.

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used.

Memory Area	Size	Device Description
0000 – 003F	1K	Interrupt Area
0040 – 004F	0.3K	BIOS Data Area
0050 – 006F	0.5K	System Data
0070 – 0E26	54K	DOS
0E27 – 0F5E	4.9K	Program Area
0F5F – 9FBF	577K	[Available]
= Conventional memory ends at 640K =		
9FC0 – 9FFF	1K	Extended BIOS Area
A000 – AFFF	64K	VGA Graphics
B000 – B7FF	32K	Unused
B800 – BFFF	32K	VGA Text
C000 – CCFF	52K	Video ROM
CD00 – CFFF	12K	Unused
D000 – D7FF	32K	ROM
D800 – DFFF	32K	Unused
E000 – EFFF	64K	BIOS Temporarily stores the area
F000 – FFFF	64K	System ROM

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required.   The following table shows the IRQ used by the devices on board.

IRQ#	Current Use	Default Use
IRQ 0	SMARTDRV	System Timer
IRQ 1	SMARTDRV	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM2
IRQ 4	System ROM	COM1
IRQ 5	[Unassigned]	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	Unassigned	Usable IRQ
IRQ 8	System ROM	Real-time Clock
IRQ 9	[Unassigned]	Usable IRQ
IRQ 10	[Unassigned]	Usable IRQ
IRQ 11	[Unassigned]	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	[Unassigned]	Usable IRQ